TRICHINOSIS

✓DISEASE AND EPIDEMIOLOGY

Clinical Description:

Trichinosis is a parasitic disease with symptoms that range from inapparent infection to fatal disease, depending on the infective dose. Most infections in the US are asymptomatic. Characteristic signs of infection include muscle soreness and pain with edema of the upper eyelids and fever. A patient may also experience nausea, vomiting, diarrhea, and abdominal discomfort as well as eye pain, photophobia, thirst, profuse sweating, chills and weakness. Remittent high fever (as high as 104°F) may occur, but usually stops after 1–6 weeks depending on the intensity of the infection. Cardiac and neurological complications may appear in the 3rd to 6th weeks following infection. Death due to myocardial failure may occur.

Causative Agent:

Trichinosis is caused by *Trichinella spiralis*, a parasitic intestinal roundworm. There are multiple species of *Trichinella* capable of causing infection in mammals, but *T. spiralis* is the most common cause of human infection.

Differential Diagnosis:

Differential diagnosis includes food poisoning and muscular rheumatism.

Laboratory identification:

Antibodies to *Trichinella* are usually not detectable until 3 weeks after infection. A variety of techniques exist to measure antibody levels including ELISA, IFA, indirect HA, precipitin assays, and bentoite flocculation assays. Testing paired acute and convalescent serum specimens is usually diagnostic. Skin tests for *Trichinella* may remain positive for several years after infection, and therefore cannot differentiate between current or past infection. Muscle biopsies are usually unnecessary; however can be performed to confirm the diagnosis.

> **UPHL:** The Utah Public Health Laboratory does not perform testing for *Trichinella.*

Treatment:

No satisfactory treatment for trichinosis exists. Bed rest and salicylates are the foundation. If a patient is known to have eaten infected meat within a week, thiabendazole administered orally for 1 week at a dose of 25 mg/kg/day can successfully kill intestinal worms. However, it is ineffective against muscle larvae and thus not suitable for established disease. Various studies have examined the use of mebendazole, albendazole, flubendazole and thiabendazole to treat established infection; however their effectiveness is still relatively unknown. Because albendazole is better tolerated, it is the recommended treatment at a dose of 400 mg/day for 5 days.

Case fatality:
Mortality among persons infected with trichinella is not common, but may occur.

Reservoir:
Pigs, dogs, cats, horses, rats, and many wild animals such as bear, wolf, wild boar, fox, and Arctic marine mammals can serve as reservoirs for *Trichinella*.

Transmission:
Transmission occurs by ingestion of raw or undercooked meats containing *Trichinella* cysts. Historically, pork and pork products were the most likely source. Beef products, which may become inadvertently contaminated with raw pork during processing, can also be a source. However, since the discontinuation of feeding raw-meat garbage to hogs, the adoption of commercial and home freezing of pork, and public awareness of the danger of eating raw or undercooked pork products, cases in the US are less commonly associated with pork products and are more often associated with eating raw or undercooked wild game meats. There is no person-to-person spread of trichinosis.

Susceptibility:
All people are susceptible. Infection results in only partial immunity.

Incubation period:
Gastrointestinal symptoms may appear within a few days of exposure. Symptoms usually occur within 8–15 days, with a range of from 5–45 days. If large numbers of cysts are ingested, symptoms may occur earlier.

Period of communicability:
Trichinosis is not transmitted directly from person to person. Animal hosts may remain infective for months, and meat from these animals remains infective until the larvae are killed by sufficient cooking, freezing, or irradiation.

Epidemiology:
Trichinosis occurs worldwide and affects people of all ages. Depending on local customs regarding eating pork or undercooked meats, the incidence of disease is variable.

✓PUBLIC HEALTH CONTROL MEASURES
Public health responsibility:
- Investigate all suspect cases of disease and fill out and submit appropriate disease investigation forms.
- Provide education to the general public, clinicians, and first responders regarding disease transmission and prevention
- Identify clusters or outbreaks of this disease and determine the source.
- Identify cases and sources to prevent further transmission.

Prevention:

Personal Preventive Measures/Education

To avoid exposures, individuals should be made aware of the following:

- Thoroughly cook pork, pork products, and all wild game until the meat is no longer pink. This can be achieved by allowing sufficient cooking time so that all parts of the meat reach an internal temperature of at least 160°F (71°C). Freezing pork less than 6 inches thick for 20 days at 5°F will kill the larvae but freezing wild game meats may leave some larvae alive.
- Grind pork in a separate grinder, and thoroughly disinfect the grinder between uses.
- Meat products should be processed by heating, freezing, or irradiating prior to drying or smoking for jerky.
- Cook any meat fed to pigs or to other animals.
- Pigs should not be allowed to eat uncooked carcasses of other animals, including rats, which may be infected with trichinosis.
- Be aware that curing (salting), drying, smoking, or microwaving meat does not consistently kill infective larvae.
- Individuals known to have recently ingested the same product as the case being investigated should consult with their health care providers regarding treatment options.

Chemoprophylaxis:

None.

Vaccine:

None.

Isolation and quarantine requirements:

Isolation: NA
Hospital: NA
Quarantine: NA

✓CASE INVESTIGATION

Reporting:

All cases of trichinosis should be reported to public health.

Case definition:

Trichinellosis (1996)

Clinical description

A disease caused by ingestion of *Trichinella* larvae. The disease has variable clinical manifestations. Common signs and symptoms among symptomatic persons include eosinophilia, fever, myalgia, and periorbital edema.

Laboratory criteria for diagnosis

- Demonstration of *Trichinella* larvae in tissue obtained by muscle biopsy, or
- Positive serologic test for *Trichinella*.

Case classification

Confirmed: a clinically compatible case that is laboratory confirmed.

Comment

In an outbreak setting, at least one case must be laboratory confirmed. Associated cases should be reported as confirmed if the patient shared an epidemiologically implicated meal or ate an epidemiologically implicated meat product and has either a positive serologic test for trichinosis or a clinically compatible illness.

Case Investigation Process:

- Determine the source of the infection.
- Fill out a morbidity form

Outbreaks:

Outbreaks of trichinosis should be investigated to determine the source of infection. Infected herds of swine should be eliminated.

Identification of case contacts and management:

NA

✓REFERENCES

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